

Appendix A Monitoring Result Requirements

Package 1

Air Quality (Emission Gas/Ambient Air Quality)

Frequency: every two months

Location KK1 (Bigin point- Mai Dich IS)			Pre-construction		Construction								Country's Standard	Referred International Standard	Remarks
Items	Units	Average Value	01/2018 & 05/2018		06/2018		08/2018		10/2018		12/2018				
			Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	
SO ₂	µg/m ³	1h	70.00	98.70	80.40	100.50	78.40	104.70	78.40	104.80	74.40	104.30	350		
		24h	70.00	98.70	91.70	91.70	92.76	92.76	93.85	93.85	93.50	93.50	125		
NO ₂	µg/m ³	1h	68.50	81.30	74.80	90.50	77.80	95.90	71.20	92.50	78.00	92.60	200		
		24h	68.50	81.30	81.87	81.87	85.62	85.62	82.66	82.66	84.90	84.90	100		
CO	µg/m ³	1h	5,600	5,890	3,781	4,600	5,798	6,680	5,220	6,570	5,767	6,634	30,000		
		24h	5,600	5,890	4,171	4,171	6,329	6,329	6,060	6,060	6,185	6,185	-		
SPM (TSP)	µg/m ³	1h	98.50	318.00	150.00	299.00	152.00	301.00	129.00	289.00	153.00	306.00	300		
		24h	98.50	318.00	245.30	245.30	238.30	238.30	203.29	203.29	229.00	229.00	200		
PM ₁₀	µg/m ³	1h	75.00	199.90	109.00	150.10	108.10	154.50	108.10	154.50	91.00	152.00	-	-	
		24h	75.00	199.90	130.04	130.04	133.45	133.45	132.82	132.82	126.10	126.10	150	125	
Temperat ure	°C	1h	20.50	29.80	27.10	34.60	26.50	34.60	24.30	29.50	17.30	23.80	-		
		24h	20.50	29.80	30.85	30.85	30.38	30.38	26.44	26.44	20.25	20.25	-		
Humidity	%	1h	74.30	86.40	70.40	80.50	70.20	89.10	70.10	82.10	70.10	82.20	-		
		24h	74.30	86.40	74.13	74.13	80.86	80.86	75.91	75.91	75.50	75.50	-		
Wind Velocity	m/s	1h	0.50	1.50	2.20	3.60	2.40	3.50	0.50	2.10	0.50	2.10	-		
		24h	0.50	1.50	2.79	2.79	2.81	2.81	1.35	1.35	1.54	1.54	-		
Wind Direction	-	1h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	-		
		24h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	-		
Pressure	hpa	1h	1,021	1,026	1,121	1,122	1,111	1,116	1,115	1,114	1,113	1,116	-		
		24h	1,021	1,026	1,121	1,122	1,113	1,113	1,114	1,114	1,115	1,115	-		

Location KK2 Hoang Quoc Viet IS			Pre-construction		Construction								Country's Standard	Referred International Standard	Remarks
Items	Units	Average Value	01/2018 & 05/2018		06/2018		08/2018		10/2018		12/2018				
			Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)			
SO ₂	µg/m ³	1h	84.20	99.10	80.30	110.40	74.40	110.70	86.20	110.70	87.00	109.10	350		
		24h	84.20	99.10	92.23	92.23	93.41	93.41	96.36	96.36	98.06	98.06	125		
NO ₂	µg/m ³	1h	67.20	89.90	69.80	90.60	79.20	95.80	78.70	95.80	84.60	96.10	200		
		24h	67.20	89.90	90.33	90.33	86.47	86.47	86.62	86.62	88.70	88.70	100		
CO	µg/m ³	1h	2,834	5,480	4,120	4,910	5,880	6,750	5,679	6,640	5,799	6,670	30,000		
		24h	2,834	5,480	4,507	4,507	6,420	6,420	6,167	6,167	6,301	6,301	-		
SPM (TSP)	µg/m ³	1h	101.20	309.20	160.00	309.00	142.00	305.00	160.00	306.00	148.00	305.00	300		
		24h	101.20	309.20	249.67	249.67	239.30	239.30	236.20	236.20	233.50	233.50	200		
PM ₁₀	µg/m ³	1h	68.30	219.90	115.20	155.50	112.50	165.40	112.50	165.40	103.30	160.40	-		
		24h	68.30	219.90	133.65	133.65	137.88	137.88	137.90	137.90	135.60	135.60	150	125	
Temperature	°C	1h	21.00	30.10	26.00	34.70	27.10	34.20	22.50	30.50	17.30	23.80	-		
		24h	21.00	30.10	30.20	30.20	30.87	30.87	25.65	25.65	20.25	20.25	-		
Humidity	%	1h	72.50	85.80	65.20	75.90	69.40	83.20	61.80	83.40	70.10	82.20	-		
		24h	72.50	85.80	70.50	70.50	75.91	75.91	77.00	77.00	75.50	75.50	-		
Wind Velocity	m/s	1h	0.50	1.20	2.00	3.30	2.50	3.40	0.70	2.40	0.80	3.10	-		
		24h	0.50	1.20	2.78	2.78	2.91	2.91	1.54	1.54	1.60	1.60	-		
Wind Direction	-	1h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	-		
		24h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	-		
Pressure	hpa	1h	1,023	1,034	1,032	1,033	1,111	1,118	1,113	1,114	1,113	1,115	-		
		24h	1,023	1,034	1,032	1,032	1,114	1,114	1,114	1,114	1,114	1,114	-		

Location KK3 Co nhue IS			Pre-construction		Construction								Country's Standard	Referred International Standard	Remarks
Items	Units	Average Value	01/2018 & 05/2018		06/2018		08/2018		10/2018		12/2018				
			Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)			
SO ₂	µg/m ³	1h	79.90	98.50	80.30	115.20	76.90	107.40	86.10	101.70	77.30	102.60	350		
	µg/m ³	24h	79.90	98.50	92.38	92.38	93.90	93.90	93.28	93.28	93.23	93.23	125		
NO ₂	µg/m ³	1h	65.70	89.20	71.50	99.20	76.00	101.20	84.10	99.20	84.60	100.90	200		
	µg/m ³	24h	65.70	89.20	81.58	81.58	87.03	87.03	91.78	91.78	92.10	92.10	100		
CO	µg/m ³	1h	2,893	5,200	4,080	4,990	5,790	6,572	5,800	6,572	5,782	6,636	30,000		
	µg/m ³	24h	2,893	5,200	4,543	4,543	6,283	6,283	6,253	6,253	6,268	6,268	-		
SPM (TSP)	µg/m ³	1h	175.70	319.20	186.00	310.00	162.00	298.00	124.00	284.00	155.00	309.00	300		
	µg/m ³	24h	175.70	319.20	254.83	254.83	241.30	241.30	211.20	211.20	243.40	243.40	200		
PM ₁₀	µg/m ³	1h	78.30	229.90	115.20	155.50	114.30	165.30	127.00	150.00	101.10	155.30	-	-	
	µg/m ³	24h	78.30	229.90	131.42	131.42	138.90	138.90	138.50	138.50	123.80	123.80	150	125	
Temperat ure	°C	1h	20.60	29.00	27.00	34.60	27.00	34.70	23.90	30.90	17.00	24.30	-		
		24h	20.60	29.00	30.49	30.49	30.92	30.92	26.63	26.63	20.28	20.28	-		
Humidity	%	1h	71.40	87.70	62.20	76.50	68.30	86.50	70.10	84.70	68.30	84.30	-		
		24h	71.40	87.70	70.13	70.13	77.83	77.83	77.73	77.73	76.40	76.40	-		
Wind Velocity	m/s	1h	0.50	1.20	2.20	3.10	2.50	3.60	0.50	1.90	0.70	3.10	-		
		24h	0.50	1.20	2.60	2.60	2.94	2.94	0.99	0.99	1.69	1.69	-		
Wind Direction	-	1h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Northeast	Northeast	-		
		24h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Northeast	Northeast	-		
Pressure	hpa	1h	1,019	1,045	1,022	1,023	1,112	1,118	1,115	1,116	1,113	1,119	-		
		24h	1,019	1,045	1,022	1,022	1,115	1,115	1,115	1,115	1,115	1,115	-		

Appendix A Monitoring Result Requirements

Package 1

Water Quality (Underground)

Location Co nhue IS

Frequency: every three months

Item	Unit	Pre-construction		Construction						QCVN 09-MT:2015 BTNMT	Referred International Standards	Remarks
		01/2018 & 05/2018		06/2018		09/2018		12/2018				
		Measured Value (Mean)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)			
t°	°C	20.1	20.1	22.1	22.1	23.1	23.1	22.3	22.3	-		
pH	-	7.06	7.06	7.05	7.05	7.04	7.04	7.2	7.2	5.5-5.8		
TS	mg/l	359	359	376.5	376.5	384.7	384.7	356.8	356.8	-		
NO ₃ ⁻	mg/l	0.8	0.8	5.4	5.4	5.4	5.4	5.2	5.2	15		
NH ₄ ⁺	mg/l	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	1		
Conductivity	s/m	1.1	1.1	1.2	1.2	1.3	1.3	1.2	1.2	-		
DO	mg/l	2.6	2.6	0.4	0.4	0.5	0.5	3.9	3.9	-		
Hardness	mg/l	85	85	150	150	152	152	139	139	500		
COD	mg/l	<3	<3	<3	<3	<3	<3	<3	<3	-		
As	mg/l	0.011	0.011	0.012	0.012	0.013	0.013	0.012	0.012	0.05		
Total Fe	mg/l	0.25	0.25	0.27	0.27	0.29	0.29	0.28	0.28	5		
Cr ⁶⁺	mg/l	<0.015	<0.015	0.04	0.04	0.04	0.04	0.02	0.02	0.05		
Turbidity	NTU	1	1	1	1	1.1	1.1	0.93	0.93	-		
Oil and Grease	mg/l	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-		
E.coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Coliform	MPN/100ml	<1	<1	<1	<1	<1	<1	<1	<1	3		

Note: all the above indicators include the impacts by public traffic and other projects.

Appendix A Monitoring Result Requirements
Package 1
Noise

Frequency: every three months

Location	Average Level	Pre-construction			Construction									Country' Standards	Referred International Standards	Remarks
		01/2018 & 05/2018			06/2018			09/2018			12/2018					
		Noise Level (dBA)			Noise Level (dBA)			Noise Level (dBA)			Noise Level (dBA)					
	L _{eq}	L ₁₀	L ₉₀	L _{eq}	L ₁₀	L ₉₀	L _{eq}	L ₁₀	L ₉₀	L _{eq}	L ₁₀	L ₉₀				
Mai Dich Overpass (O1)	6h-22h	75.99	110.19	73.07	74.04	107.36	71.33	72.27	104.36	69.33	73.69	106.84	48.95	70 (6h-21h)	55	
	22h-6h	54.12	78.48	52.04	54	78.3	52.04	55.1	79.89	53.1	55.87	81	37.11	55 (21h-6h)	45	
Hoang Quoc Viet Intersection (O2)	6h-22h	75.15	108.97	72.26	74.63	108.22	71.91	72.62	105.3	69.99	73.8	107.01	49.02	70 (6h-21h)	55	
	22h-6h	54.44	78.94	52.35	55.2	80.04	53.18	56.86	82.44	54.79	56.47	81.87	37.05	55 (21h-6h)	45	
Co Nhue Crossroads (O3)	6h-22h	75	108.75	72.12	75.54	109.57	72.78	74	107.31	71.32	73.91	107.16	49.09	70 (6h-21h)	55	
	22h-6h	53.76	77.96	51.69	52.8	76.56	50.88	53.86	78.09	51.9	56.01	81.21	37.2	55 (21h-6h)	45	

Note: all the above indicators include the impacts by public traffic and other projects.

Appendix A Monitoring Result Requirements

Package 1

Vibration

Frequency: every three months

Location	Average Value	Pre-construction				Construction				Country' Standards	Referred International Standards	Remarks
		01/2018 & 05/2018				06/2018						
		Vibration(dB)				Vibration(dB)						
L _{aeg} (dB)	Frequency (kHz)	L _{veg} (mm/s)	Frequency (kHz)	L _{aeg} (dB)	Frequency (kHz)	L _{veg} (mm/s)	Frequency(kHz)					
Mai Dich Overpass (R1)	6h-22h	64.38	1-20	1.94	1-3	68.8	1-20	2.68	1-3	75(6h-21h)		
	22h-6h	55	1-20	1.75	1-3	59.67	1-20	2.3	1-3	Baseline (6h-21h)		
Hoang Quoc Viet Intersection (R2)	6h-22h	63.83	1-20	2.19	1-3	69.81	1-20	2.67	1-3	75(6h-21h)		
	22h-6h	59.87	1-20	1.8	1-3	60.43	1-20	2.33	1-3	Baseline (6h-21h)		
Co Nhue Crossroads (R3)	6h-22h	63.02	1-20	2.02	1-3	69.35	1-20	2.65	1-3	75(6h-21h)		
	22h-6h	58.08	1-20	1.8	1-3	59.91	1-20	2.34	1-3	Baseline (6h-21h)		

Location	Average Value	Construction								Country' Standards	Referred International Standards	Remarks
		09/2018				12/2018						
		Vibration(dB)				Vibration(dB)						
L _{aeg} (dB)	Frequency (kHz)	L _{veg} (mm/s)	Frequency(kHz)	L _{aeg} (dB)	Frequency (kHz)	L _{veg} (mm/s)	Frequency(kHz)					
Mai Dich Overpass (R1)	6h-22h	67.6	1-20	2.55	1-3	66.1	1-20	2.91	1-3	75(6h-21h)		
	22h-6h	57.46	1-20	2.29	1-3	51.52	1-20	2.27	1-3	Baseline (6h-21h)		
Hoang Quoc Viet Intersection (R2)	6h-22h	68.67	1-20	2.6	1-3	66.95	1-20	2.94	1-3	75(6h-21h)		
	22h-6h	59.24	1-20	2.35	1-3	56.64	1-20	2.49	1-3	Baseline (6h-21h)		
Co Nhue Crossroads (R3)	6h-22h	68.66	1-20	2.61	1-3	62.88	1-20	2.77	1-3	75(6h-21h)		
	22h-6h	58.15	1-20	2.32	1-3	51.62	1-20	2.27	1-3	Baseline (6h-21h)		

Note: all the above indicators include the impacts by public traffic and other projects.